AN EXPERIMENTAL STUDY OF THE PERFORMANCES OF TWO HUNDRED FIFTY ELEMENTARY SCHOOL CHILDREN, URBAN AND RURAL, FIFTH THROUGH EIGHTH GRADES, ON THE SEASHORE MEASURES OF MUSICAL TALENT

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CHAPTER I

INTRODUCTION

The possession of musical talent is commonly regarded as a special gift not given to individuals in like degree.

Standardized tests now make it possible for an estimate to be made of native musical endowment. The Seashore Measures of Musical Talent are probably the foremost tests for analyzing innate musical capacity and until recently, they were the only tests available.

Carl E. Seashore of the University of Iowa has developed a system for measuring and recording graphically the degrees of talent the individual possesses. He analyzed the composite talent of music into six phases or basic capacities which will tell with a high degree of accuracy how far one may be expected to progress efficiently in music.

The Kwalwasser-Dykema Tests form a new battery of ten tests measuring musical capacity. They are given by means of the phonograph and in contrast to the Seashore Tests, use actual music material. There is need for research anaylsis for this new battery of music tests before giving conclusions as to its value and limitations.

Other available music tests are: The Gildersleeve Music Achievement Test; The Kwalwasser-Ruch Test of Musical Accomplishment; The Torgerson-Fahnestock Tests dealing with theoretical knowledge of items and ear training proficiency; The Hillbrand Sight-Singing Test; The Mosher Test of Individual Singing; some less formal and developed tests,such as,Lowery's Tests of Cadence and Musical Memory; Eight Tests of Musical Ability by Revecz; Rupp's measures of eight abilities closely related to musicality

and the Frances A. Wright Tests.[1]

Music tests are of two types:

1. The prognostic tests which measure the innate capacity of individuals for learning music.

2. The achievement tests which measure the use made of native ability.

The present study is concerned with tests of the first type.

Extensive research has not been made in the study of musical talent, but the recent studies of Seashore, Kwalwasser and Dykema and other investigators have drawn more attention to a more objective analysis of a music curriculum. The musical capacity of the student is still largely judged by the personal opinion of the music expert; the question of talent is more or less a matter of guess.

The Seashore Tests measure innate musical capacity objectively. The music teacher is, therefore, enabled to discover in advance with a high degree of reliability, information of pupil ability. They help (1) to select those students from whom it is useless to require music to be taken; (2) to select those of major music talent for whom it would be worth while to give time to training them with a view to the possibility of their becoming music artists; (3) to classify beginning music pupils into homogeneous groups.[2]

Historical Background. - Gray and Bringham tested subjects from the sixth, seventh and eighth grades.[3] They added together the scores obtained from the Seashore tests forming a total music score. The results

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[1] Mursell and Glenn, The Psychology of School Music Teaching, Boston: Silver Burdette, 1931, pp. 33-340.

[2] Clara McCauley, A Professionalized Study of Public School Music, Knoxville: Joseph E. Avent, 1932. p. 108.

[3] C. T. Gray and C. W. Bingham, "Musical Ability of Colored and White Pupils," Journal of Educational Psychology, Vol. XX (1929). pp. 501-06.

of the Otis Advanced Intelligence Examination made up an index of brightness. These tests intercorrelated to the extent of .58±.09 for colored boys, 53±.11 for colored girls, .70±.05 for white boys, and .68±.05 for white girls.

Broom reports the findings by the six Seashore Measures of Musical Talent. He tested eighty-two college juniors and seniors in the San Diego State Teachers College and one hundred ninth grade pupils of the High School of San Diego.[1]

He found the differences in pitch, intensity and time to be significant in favor of the adults. He concludes that maturity is a factor which aids in securing a high score in these three tests. Of the remaining three tests, only one is in favor of the junior high pupils. The dispersion in the junior high school was greater in each of the six score distributions.

Hollingsworth has tested intellectually gifted children. Her subjects gave mean percentiles on the fifth-grade norms of: pitch, 47; intensity, 50; time, 58; consonance, 48; and memory, 52.[2] Her conclusions were that:

> "Above the level of intelligence required to understand and execute the directions for taking the Seashore tests tests (mental age of about ten years), performance in pitch discrimination, perception of intensity, perception of consonance, and tonal memory is not symptomatic of intellectual endowment."

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[1] M. E. Broom, "A Note Concerning the Seashore Measures of Musical Talent," School and Society, Vol. XXX (1929), pp. 274-75.

[2] L. S. Hollingsworth, "Musical Sensitivity of Children Who Test Above 135.I. Q.," Journal of Educational Psychology, Vol. XVII, (1926). pp. 95-109.

Brown has obtained a correlation between the Seashore tests and intelligence ratings on junior and senior high school subjects of .24.[1]

Mosher found the correlations between music achievement scores and the Seashore measures to be: time, .36; consonance, 29; pitch, .44; memory, .44; and intensity, 49.[2] He used four hundred and fifty students as subjects.

Barnes reported a high correlation found between grades obtained in music and the Seashore tests.[3]

Wright made a comparison of the performances of fifty-two students of the F A W tests, which are composed of dictation, visual performance and motor memory, with the Seashore Tests of Musical Talent.[4] The correlations proved to be significant. The correlations found on the three tests were: .45, .51, and .73.

Weaver has given correlations between a portion of the Seashore battery and the Army Alpha test: pitch, .35; intensity, .24; time, .12; consonance, .06; and tonal memory, .26.[5]

Seashore found a correlation of .10±.09 between percentile rank in the Iowa Qualifying Examination and rank in the rhythm test.[6] These tests were given to the male students at the State University of Iowa.

Peterson has found the correlations with the Otis test to be .04 for consonance for the white students and .45 for tonal memory for Negro students.[7]

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[1] A. W. Brown, "The Reliability and Validity of the Seashore Tests for Musical Talent," Journal of Applied Psychology, Vol. XII, (1928). pp. 468-476.

[2] R. M. Mosher, "A Study of Group Method of Measurement of Sight-Singing," Teachers College Contributions to Education. No. 194, (1925). p. 75.

[3] J. C. Barnes, "A Study Reported by J. Peterson in Proceedings of the Twenty-Fourth Meeting of the Southern Society for Philosophy and Psychology," American Journal of Psychology. No. 4, (1929). p. 507.

[4] F. A. Wright, "The Correlation Between Achievement and Capacity in Music," Journal of Educational Research, No. 17, (1928). pp. 50-56.

[5] A. T. Weaver, "Experimental Studies in Vocal Expression," Journal of Applied Psychology. No. 8, (1924), pp. 23-51, 159-186.

[6] R. H. Seashore, "Studies in Motor Rhythm," Psychology Monograph. No. 167 (1926). pp. 142-189.

[7] J. Peterson, "Comparative Pyschological Study of Negroes and Whites," Report of Annual Meeting, Division Anthropology and Psychology, National Research Council. (1926).

Beach has reported a correlation between the Seashore tests and Army Alpha on four hundred and fifty college freshmen of less than .10.[1]

Highsmith has given the results of the correlation between the Seashore battery and a combined intelligence rating made from the Terman Group Test and the Thurstone Psychological Examination.[2] The results are: pitch, 58; intensity, .35; time, .39; consonance, -.14; memory, .30; average Seashore, .36. The subjects were students of a school of music.

A fifth grade survey based upon the Seashore Measurements of Musical Talent was given to determine the pupils chosen for a laboratory experiment.[3] The best thirty per cent of the children were sent to the laboratory of the School of Education at Northwestern University.

The study of a senior at the Music School of Northwestern demonstrates definitely that there is a positive correlation between the findings of the fifth grade survey and the subsequent musical development of the child.

Mursell of Lawrence College used eighty-eight trained students in music and eighty-eight untrained students in administering the Seashore Tests.[4] He obtained a low correlation. He also obtained a low correlation when he used specific tests of special musical abilities such as sight-singing. From this study, it is intimated that "the chief value of the Seashore tests lies in their capacity to differentiate extremes within groups."[5]

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[1] F. A. Beach, "Some Comparative Measures of Intelligence, Musical Capacity, and Achievement." Proc. Music Teachers National Association, (1924), p. 112.

[2] J. A. Highsmith, "Selecting Musical Talent," Journal of Applied Psychology, No. 13, (1929). pp. 486-493.

[3] Osbourne McConathy, "Public School Music. Report of An Experiment in Organizing a Course for Music Students. Evanston, Illinois. Northwestern University School of Music," Journal of Educational Research, Vol. XIV, (1926). p. 292.

[4] J. L. Mursell, "Measuring Musical Ability and Achievement: A Study of the Correlations of Seashore Test Scores and Other Variables." Journal of Educational Research, Vol. XXV, (February, 1932). pp. 116-126.

[5] Ibid., p. 120.

Seashore reports that there are no appreciable sex differences in pitch discrimination.[1]

Hazel M. Stanton, school psychologist for the Eastman School of Music of the University of Rochester at Rochester, New York, gives the results of the Seashore measures of musical talent made during a period of twelve years.[2]

She gave the tests to four successive classes of students who were candidates for the Bachelor of Music degree or certificate. They were classified at entrance into five groups, according to the scores made upon the Seashore tests. Five hundred and sixty-five students were classified.

The validity of the predictions is consistent with the individual differences found at entrance as can be readily seen by the following table:

Prediction	Number So Rated	Pc + g Graduated
Safe	125	60
Probable	143	42
Possible	195	33
Doubtful	73	23
To be discouraged	29	17

Teachers' rating habits she found to be wide of the marks. In a comparison of the teachers' marks and scores received by the same group on objective tests, the teachers' marks averaged 44.5 while the average of the test scores was 80.3.[3] She concluded from this experiment that teachers were apt to underestimate talent.

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[1] C. E. Seashore, The Psychology of Musical Talent. Boston: Silver, Burdette, 1919. pp. xvi, 288.

[2] Hazel M. Stanton, New Tests Aid in Music, The New York Times, Sunday (December 2, 1934).

[3] Ibid.

After a lapse of three years, a similar experiment was conducted The teachers had made an effort to develop accuracy in the interval.[1] This time the teachers' ratings were 83.9 while the test average was 87.4. Stanton concludes that a common basis for describing musical talent is valuable. The Seashore tests were used.

Larson found a steady increase in ratings on the Seashore Tests applied to members of orchestra ensembles.[2] The elementary instrumental classes gave an average for the six Seashore Tests of 52.1; the junior high school preparatory orchestra, 49.1; the junior high school advanced orchestra 66; the senior high school advanced orchestra, 73.2. He considered this a significant advance and suggested that promising candidates for the orchestral ensembles could be determined in the elementary instrumental classes by giving the Seashore Tests.

Mary Louden administered the Seashore Tests to one hundred and twenty-five seventh and eighth grade pupils.[3] Music was a required subject in a junior high school. There was a preponderance of complaints concerning the requirement. The tests were given to determine whether pupil choice of a subject in the curriculum was a criterion of the pupils ability to profit by training therein.

She found that the forty-two who voted for music were specially gifted. Eighty-three voted to omit it. The tests showed that the percentage of that group who had average ability or better was decidedly higher than a similar percentage of the group, rejecting further school music. Approximately half of the group rejecting it were found in the lowest quartile. Nineteen

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[1] Hazel M. Stanton , "New Tests Aid in Music." The New York Times,(Sunday,Dec. 2 1934)

[2] Mursell and Glenn, The Psychology of School Music Teaching. Boston: Silver, Burdette, 1931. p. 317.

[3] Mary Louden, "The Required Music Course in the Light of Pupil Ability," The Elementary School Journal, (October, 1934). p. 103.

per cent of the pupils in the group electing music scored above the first quartile in all six abilities and none scored so low as the first quartile in all six of the tests. Only twenty-two per cent of the pupils rejecting music scored above the first quartile in all six abilities tested and one hundred and thirty-two ranked at or below the lowest quartile in all six tests.

Race Differences.- Davenport and Steggerda utilized Seashore's measures of musical talent with a group of three hundred children and ninety adults, representing three racial groups, blacks, whites and browns in Jamaica.[1] They found that on the whole the blacks were superior to the whites in musical capacity, especially in time, rhythm, intensity and pitch. The whites were slightly superior in tonal memory, and in consonance, there was not a significant difference. The browns tended to fall between the blacks and the whites. "The whites in Jamaica would be considered inferior in an American school population. For example, in the pitch test in which the blacks were consistently superior to the whites, they were nevertheless as high as Seashore's sampling of fifth grade public school children."

Johnson gave the Seashore measures of musical talent to Negro children of the fifth and the eighth grades.[2] The consonance test was not given. The results were compared with Seashore's findings for public school pupils in Iowa. He found no significant differences due to race. The Negroes appeared more variable than the whites, however, and in relation to white children, the fifth grade Negroes did better than the eighth grade Negroes.

Streep gave the rhythm and consonance tests to six hundred and thirty-seven white children and six hundred and thirty-seven Negro children

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[1] C. B. Davenport and M. Steggerda, "Race Crossing in Jamaica," Carnegie Institute of Washington, Publication No. 395. Washington, D. C. 1929, pp. ix, 516.

[2] Guy B. Johnson, "A Summary of Negro Scores on the Seashore Measures of Musical Talent." Journal of Comparative Psychology, No. 11, (1931). pp. 383-393.

in grades three, four, five and six in three public schools of the City of New York.[1] The Negroes were found to be slightly superior in all of the four grades. The difference did not appear significant except in the fourth grade. The Negro scores were higher for consonance. The difference in this talent was also small except in the third grade. Streep's calculations show that there is a ninety-nine per cent likelihood of a difference greater than zero in these two instances.

Sanderson made a study of Polish, Negro, Italian, German and Jewish children.[2] She gave three of the Seashore measures, pitch, intensity and memory, together with the Kwalwasser-Dykema music tests to fourteen year old children. The Jewish group was superior to all others, the German was second. The Polish were inferior, while the Negroes were inferior also except in rhythm. The Italians were near the middle for most of the tests.

Summary and Conclusions.-These investigations show the many uses and interpretations of the Seashore Measures when applied as an objective analysis of a music curriculum.

The Eastman School of Music and the Music School of Northwestern University have used these tests to advantage in classifying music pupils into homogeneous groups and for selecting pupils of major music talent.

Davenport and Steggerda, Johnson, Streep and Sanderson have attempted to discover differences in musical capacity due to race.

Hollingsworth found that intellectually gifted children were not endowed with unusual musical ability.

Gray and Bingham, Brown, Weaver, Seashore, Peterson, Beach and Highsmith made interesting studies correlating musical ability with intelligence.

Mosher correlated music achievement scores with musical ability and Barnes correlated grades obtained in music with the Seashore Measures

[1]Rosalind Streep, "A Comparison of White and Negro Children in Rhythm and Consonance." Journal of Applied Psychology. No. 15 (1931) pp. 53-71

[2]Stoddard and Wellman, Child Psychology, New York, Macmillan, 1934. p. 295.

of Musical Talent.

Broom made a comparison of the performances of college junior and senior students and high school students. He concluded that maturity was a factor which aided in securing a high score in these tests.

Larson suggests that these tests may be used in selecting members for an orchestra. Lowden used the Seashore tests to aid in a difficult problem of the music curriculum.

The results of these various studies may differ somewhat but they all point to the usefulness of an objective measure applied to musical talent.

Davenport, in his study of racial differences, found the blacks superior to the whites in time, rhythm, intensity and pitch. Johnson found no significant differences due to race. Streep found Negro school children in the public schools of the City of New York slightly superior, the difference not significant, however, except in the fourth grade. Sanderson, on the other hand, found Negroes inferior except in rhythm. The Jews ranked first, followed by the Germans.

Gray and Bingham found a good correlation for colored boys and girls between intelligence and musical ability and a high correlation for both white girls and white boys.

Seashore and Beach report low correlations for intelligence and musical ability. Brown finds a slight relationship between the Seashore tests and intelligence ratings. Highsmith, Weaver and Peterson report correlations found between the single tests of the battery and intelligence ratings. Weaver and Highsmith both find that pitch has the highest correlation of all of the tests with consonance ranking lowest. Tonal memory seems to have a fairly good correlation with intelligence according to these three investigators.

There are differences in the correlations found between intelligence ratings and musical ability, some investigators reporting high relationship and others low relationship. The correlations on the achievement side are all high and there seems to be agreement that a high rank in native ability indicates a high rank for musical achievement. Barnes reports a high correlation found between grades obtained in music and the Seashore tests.

The Eastman School has also used the tests for teachers' rating habits. It was found that teachers were apt to underestimate talent and the conclusion was that a common basis for describing musical talent was valuable.

The Purpose of the Study.- The purpose of this investigation is to make a parallel study of one hundred and twenty-five Negro urban children and one hundred and twenty-five Negro rural children; to ascertain and compare what differences in musical talent exist in the group, so far as the results of the tests show; to determine the relationship of the factors involved in the measures of talent and those involved in intelligence; to note the tendencies of the groups to vary in performing the tests; to determine the reliability of the difference between the groups in performing the tests; to analyze the profile of the performance of certain individuals within each group for the purpose of noting certain trends in the distribution of talent.

Description of the Tests.- The Seashore Measures of Musical Talent consist of a battery of six phonograph records measuring sensitivity to pitch, intensity, time, consonance, rhythm and tonal memory.

The Sense of Pitch Test attempts to show the least perceptible difference in pitch. One hundred pairs of stimuli are used. The subject is to decide whether the second tone of each pair is higher or lower than the first. The arrangement is from easy to difficult.

The Sense of Intensity Test and the Sense of Time Test also attempt to demonstrate the smallest differences in intensity and in time.

The Sense of Intensity Test presents one hundred pairs of stimuli. The pupil is to determine whether the second tone is weaker or stronger in intensity than the first. As in the above mentioned test, the arrangement of times is from easy to difficult.

One hundred sets of stimuli are given to the subject in the Sense of Time Test. Each set consists of three clicks which mark off intervals of time. The subject is to rate the second interval as longer or shorter than the first.

A fourth test, the Sense of Consonance, contains fifty items. The subject compares the smoothness, the blending of tones and is to judge whether the second pair of tones heard is better or worse than the first pair of tones.

The Tonal Memory Test is composed of fifty series. The first ten trials have two-tone patterns; the next ten three-tone; then four, then five, and then six in the last group. Five degrees of difficulty are included in this test. Every tonal pattern is repeated, and in the repetition, one note is changed. The subject records by number which note is changed.

The Sense of Rhythm Test contains fifty rhythmic patterns which are played twice, either in the same or in a different form. The subject records whether the pattern has been altered or is the same.

The test material needed for administering the Seashore Measures of Musical Talent is contained on six double-disc Columbia records. The measures are so adjusted as to be easy enough in parts for the poorest listener, and difficult enough in parts for the best listener.[1] A measure

[1] C. E. Seashore, Manual of Instructions and Interpretations for Measures of Musical Talent. p. 2.

consists in the playing of both sides of a disc. The playing of one side takes from four to five minutes. The material is so ordered as to regulate natural periods for the flow of attention.

The discs may be played on any good phonograph. It was necessary to take care about winding the instrument; the interruption at the middle of the record was used to turn the crank.

The Stanford-Binet and the Terman-Group Tests furnish the intelligence ratings used in the correlations of the single tests of the battery and the combined score with intelligence.

Methods of Procedure.- The pupils were given test blanks mimeographed from the model given in the manual of instructions and interpretations for Measures of Musical Talent.

1. Specific instructions were given to the listeners for each measure and the method of recording was explained.

2. Preliminary practice was given until the nature of the test was understood. The A-side of the disc was used.

3. The experimenter was careful to guard against memorizing the order of the test on the part of the pupils.

4. Precautions were taken against copying from neighbors.

5. A prompt record was required for all trials. It was explained that there was always a difference.

6. After the preliminary trials and the full explanation, the listeners were charged to give their attention in maximum effort without interruption throughout the playing. They were impressed with the fact that every trial counted.

7. The results were checked by a key which gave the right answer for each trial for each measure. The number of mistakes in the entire record were counted by the experimenter and this number was subtracted from the

total number of trials. This gave the number of right answers. This was reduced to per cent right by dividing the number of correct answers by the total number of trials.

8. The per cent right was transformed into centile rank. Centile rank denotes the rank that the person holds in a community of his kind on a scale of 100, in which 100 represents the highest possible rank, 1 the lowest possible, and 50 the average. Thus, in pitch, 75 per cent right for the adult yields a centile rank of 25; for the eighth grade 40+; and for the fifth grade, 70.

The average age for fifth grade children is between ten and eleven years, and for eighth grade children, about fourteen.[1] In dealing with children, the investigator finds that the grade is more significant than the age.

The distribution of per cent right gains significance when interpreted quantitatively in terms of the smallest difference that can be perceived. Thus, a person who ranks near the centile 100 may hear a difference of one two-hundredth of a tone, whereas a person who ranks 1 can not hear a difference of less than a half tone. The former is more than a hundred times as keen as the latter. The person who ranks 50, and therefore average, can hear a difference of 2.7 vibrations, i. e., five-hundredths of a tone.

The experimenter gave the tests in the morning. About twenty-five children comprised the groups tested. Two tests were given at one sitting and an interval of a week lapsed before presenting another set.

After the preliminary arrangement of proper seating, distribution of blanks, and the recording of the name by the pupil; the name of the test, the date, the hour, the school, the grade, the age upon the blanks, a preliminary test was given. The answers were given aloud by the listeners

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[1] Ibid., p. 5.

at first and afterwards recorded on the blanks. When the nature of the test was fully understood, the test itself was given.

A separate blank was issued for each test.

Administering the Tests.- The Sense of Pitch: You will hear two tones which differ in pitch. You are to judge whether the second is higher or lower than the first. If the second is higher, record H; if lower, record L.

The Sense of Intensity: You will hear two tones which differ in loudness, or strength. You are to judge whether the second is weaker or stronger. If the second is stronger, record S, if the second is weaker, record W.

The Sense of Time: (For this test the instrument was set at about sixty revolutions per minute.) You will hear three clicks marking off two intervals of time. If the second interval (that is, the time between the second and the third clicks) is longer than the first interval, record L; if it is shorter, record S.

The Sense of Consonance: You will hear two combinations of two tones each; one combination is better or worse than the other in consonance (harmony). A good combination is one in which the two tones are smooth, and blend, tending to fuse together into one. A bad combination is just the opposite. If the second combination is better, record B, if worse, W.

Tonal Memory: In each trial you will hear a series of tones played twice. In the second playing, one note is changed. In listening, count mentally; for example, 1, 2, in the first playing, and then likewise, in the second playing, so you may identify the one that is changed without error.

The Sense of Rhythm: You will hear in rapid succession two rhythmic patterns; the second is either the same as the first or different.

Listen and record either S, for same, or D, for different. (The examiner illustrated what was meant by rhythm.)

Critical Evaluation.- Validity.[1] "The material presented in these records furnishes measures for six of the most fundamental and essential capacities of the musical mind.

These measures of musical talent comply with the following conditions: they are standardized for content that does not need to be changed; they give quantitative results which may be verified to a high degree of certainty; they are simple and as nearly self-operating as possible; they are adapted for group measurements; they take into account practice, training, age and intelligence; they have a two-fold value in the concrete information furnished, and in the training and pleasure gained from the critical hearing of musical elements. These measures are adapted primarily for use in the regular music course and for special surveys in the public schools.[2]

These six measures do not constitute a complete survey of musical talent, as may be seen in the analysis of musical mind and inventory of talents in the textbook, but they are specific measures of these six basic capacities. That is what makes them scientific. They do not measure the musical mind as a whole, but they do measure specific and fundamental traits of the musical mind."

Time.- The retest reliabilities for time were as follows: Gaw, .46± .07, and .56 ± .07; Lainer, .50± .05; Peterson .45± .05 for white students and .62± .03 for Negroes; Brown, .48± .05; Ruch and Stoddard, .53± .05; and Highsmith, .52± .07.[3]

Consonance.- The retest reliabilities for consonance were found as follows: Gaw, .49± .08, and .57± .07; Lanier, .54 ± .05; Peterson, .68± .04

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[1]Seashore, op. cit. pp. 1-5.

[2]Ibid.

[3]Paul R. Farnsworth, "A Study of the Seashore-Kwalwasser Tests," Genetic Psychology Monograph, Vol. IX (May, 1931) pp. 304-306.

for the white students and .52± .03 for Negroes; Brown, .43± .05; Ruch and Stoddard, .35± .06; and Highsmith .53± .06.[1]

Rhythm.- The retest reliabilities for rhythm were as follows: Lanier, .43± .05; Peterson, .50± .05 for white students and .45± .04 for Negroes; Brown, .29± .06; Ruch and Stoddard, .50± .05.[2]

Reliability.- Two types of reliabilities were used for these tests - retest and split-half correlations.

McCarthy found a retest reliability in pitch of .70.[3]

Peterson reports retest reliabilities in pitch as .88± .02 for white college students (Peabody College) and .77± .02 for colored college students (Fisk University).[4]

Intensity.- The retest reliabilities found in intensity were: Gaw, .55± .06, and .94± .01; Lanier, .60± .04; Peterson, .75± .03 for white students and .65± .03 for Negroes; Brown, .65 ± .04; Ruch and Stoddard, .66± .04; McCarthy, .68; and Highsmith, .50± .07.[5]

Tonal Memory.- The retest reliabilities for tonal memory were reported as: Gaw, .90 ± .02 and .88± .04; Lanier, .67± .04; Peterson, .67± .03 for white students and .80± .02 for Negroes; Brown .59± .04; Ruch and Stoddard .66± .04; and Highsmith, .83± .03.[6]

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[1] Farmsworth, op. cit., p. 305.

[2] Ibid., p. 306.

[3] D. McCarthy, "A Study of the Seashore Measures of Musical Talent," Journal of Applied Psychology, (1930) pp. 437-455.

[4] J. Peterson, "A Functional View of Consonance," Psychology Review, (1925) pp. 17-33.

[5] Farmsworth, op. cit., p. 303.

[6] Ibid., p. 307.

Mrs. Larson gives the following values for eighth grade school students: pitch, .83 ± .01, and .85 ± .02; intensity, .80 ± .02, .83 ± .02; time, .59 ± .03, .62 ± .04; consonance, .55 ± .03, .54 ± .05; memory, .87 ± .01, .88 ± .02; rhythm, .56 ± .03, .59 ± .05.[1]

For seventh grade, she found these values: pitch, .90 ± .01; intensity, .78 ± .03; time, .69 ± .03; consonance, .57 ± .04; tonal memory, .90 ± .01; and rhythm, .54 ± .05.

For the sixth grade, the values were: pitch, .82 ± .01; imtensity, .83 ± .02; time, .80 ± .02; consonance, .57 ± .04; memory, .84 ± .02; rhythm, .42 ± .05.

The fifth-graders gave values as follows: pitch, .84 ± .02; intensity, .81 ± .02; time, .85 ± .02; consonance, .36 ± .05; memory, .84 ± .02; rhythm, .46 ± .04.

Limitations of the Problem.- The problem is limited to colored school children, urban and rural, grades five through eight, one hundred and twenty-five in each group.

The urban group consists of private school children of the city of Atlanta. The rural group consists of children from four rural communities within a radius of thirty miles of the city of Atlanta.

[1] R. C. Larson, "Studies on Seashore's Measures of Musical Talent," Iowa Stud., Ser. Aims and Prog. Res., 1930, 2, No. 6. (First Ser. No. 174). p. 83

CHAPTER II

STATISTICAL TREATMENT OF DATA AND INTERPRETATION OF RESULTS

Two hundred and fifty subjects gave fifteen hundred records. By these records, several possibilities of treatment were presented.

The groups were compared with respect to (1) pitch, intensity, time, consonance, tonal memory and rhythm; (2) the per cent of the rural group which exceeded the mean of the urban group; (3) the reliability of the difference in favor of the city group. The results of these various trials were correlated with those of the Intelligence Tests.

The two groups were compared with respect to their ability to maintain the same relative rank throughout the six tests.

Measures of Variability.- Tables I - VI show the means, standard deviations and the standard error of the averages for each trait. The figures are shown for both groups - urban and rural with the number of cases for grades five, six, seven and eight.

Table I shows the values mentioned above for the Sense of Pitch; Table II, for the Sense of Intensity; Table III, for the Sense of Time; Table IV, for the Sense of Consonance; Table V, for Tonal Memory and Table VI for the Sense of Rhythm. (See Pages 20 - 30.)

Table I.- (See Page 21) The mean for the fifth grade urban group for the sense of pitch is 60.78 with a standard error of ± 2.14, and the mean for the fifth grade rural group is 52.18 with a standard error of ±1.65.

The mean for the sixth grade urban group for the sense of pitch is 57.08 with a standard error of ± 2.44. The mean for the sixth grade rural group is 53.18 for the sense of pitch with a standard error of ± 1.69.

The mean for the seventh grade urban group for the sense of pitch is 53.50 with a standard error of ± 1.83. The mean for the seventh grade

rural group for the sense of pitch is 51.78 with a standard error of ± 2.46.

The mean of the eighth grade urban group for the sense of pitch is 53.50 with a standard error of ± 1.82. The mean of the eighth grade rural group for the sense of pitch is 54.01 with a standard error of ± 2.21.

Table II.- (See Page 22) The mean of the fifth grade urban group for the sense of intensity is 67.23 with a standard error of ± 1.81. The mean of the fifth grade rural group for the sense of intensity is 56.71 with a standard error of ± 1.85.

The mean of the sixth grade urban group for the sense of intensity is 69.58 with a standard error of ± 2.02. The mean of the sixth grade rural group for the sense of intensity is 57.10 with a standard error of ± 1.50.

The mean of the seventh grade urban group for the sense of intensity is 69.30 with a standard error of ± 2.41. The mean of the seventh grade rural group is 64.16 for the sense of intensity with a standard error of ± 3.15.

TABLE I

COMPARISON OF AVERAGE SCORES OF TWO GROUPS OF NEGRO SCHOOL CHILDREN ON THE SEASHORE MEASURES OF MUSICAL TALENT

PITCH (CITY GROUP)

Grade	V	VI	VII	VIII	Total
Number of Cases	38	36	25	30	129
Mean	60.78	57.08	55.30	53.50	
Standard deviation of distribution	±13.20	±14.65	± 9.15	±10.00	
Standard error of the average	±2.14	± 2.44	± 1.83	± 1.82	
		(RURAL GROUP)		VIII and above	
Number of Cases	31	37	14	43	130
Mean	52.18	53.18	51.78	54.01	
Standard deviation of distribution	± 9.20	±10.30	± 9.20	±14.50	
Standard error of the average	± 1.65	± 1.69	± 2.46	± 2.21	

TABLE II

COMPARISON OF AVERAGE SCORES OF TWO GROUPS OF NEGRO SCHOOL CHILDREN ON THE SEASHORE MEASURES OF MUSICAL TALENT

INTENSITY

(CITY GROUP)

Grade	V	VI	VII	VIII	Total
Number of Cases	38	36	25	30	129
Mean	67.23	69.58	69.30	65.16	
Standard deviation of the distribution	±11.15	±12.15	±12.05	±10.93	
Standard error of the average	±1.81	± 2.02	± 2.41	± 1.99	

(RURAL GROUP) VIII and above

Number of Cases	32	38	15	45	130
Mean	56.71	57.10	64.16	65.50	
Standard deviation of the distribution	±10.50	± 9.30	±12.20	±12.65	
Standard error of the average	±1.85	± 1.50	± 3.15	± 1.88	

The mean of the eighth grade urban group for the sense of intensity is 65.16, with a standard error of ± 1.99. The mean of the eighth grade rural group for the sense of intensity is 65.50 with a standard error of ± 1.88.

Table III.- (See Page 24). The mean of the fifth grade urban group for the sense of time is 55.83 with a standard error of ± 1.19. The mean of the fifth grade rural group for the sense of time is 51.97 with a standard error of ± 1.61.

The mean of the sixth grade urban group for the sense of time is 60.41 with a standard error of ± 1.45. The mean of the sixth grade rural group for the sense of time is 53.59 with a standard error of ± 1.45.

The mean of the seventh grade urban group for the sense of time is 64.79 with a standard error of ± 2.05. The meanof the seventh grade rural group for the sense of time is 53.57 with a standard error of ± 3.11.

The mean of the eighth grade urban group for the sense of time is 61.16 with a standard error of ± 1.21. The mean of the eighth grade rural group for the sense of time is 61.83 with a standard error of ± 1.59.

Table IV.- (See Page 25). The mean of the fifth grade urban group for the sense of consonance is 56.31 with a standard error of ± 1.58. The mean of the fifth grade rural group for the sense of consonance is 54.37 with a standard error of±1.81.

The mean of the sixth grade urban group for the sense of consonance is 63.05 with a standard error of ± 1.21. The mean of the sixth grade rural group for the sense of consonance is 55.92 with a standard error of ± 1.38.

TABLE III

COMPARISON OF AVERAGE SCORES OF TWO GROUPS OF NEGRO SCHOOL CHILDREN ON THE SEASHORE MEASURES OF MUSICAL TALENT

TIME (

(CITY GROUP)

Grade	V	VI	VII	VIII	Total
Number of Cases	39	36	24	30	129
Mean	55.83	60.41	64.79	61.16	
Standard deviation of the distribution	± 7.45	± 8.75	±10.05	± 6.65	
Standard error of the average	± 1.19	± 1.45	± 2.05	± 1.21	

	(RURAL GROUP)			VIII and above	
Number of Cases	19	32	14	37	102
Mean	51.97	53.59	53.57	61.83	
Standard deviation of the distribution	± 7.05	±8.25	±11.65	±9.70	
Standard error of the average	± 1.61	±1.45	± 3.11	±1.59	

TABLE IV

COMPARISON OF AVERAGE SCORES OF TWO GROUPS OF NEGRO SCHOOL CHILDREN ON THE SEASHORE MEASURES OF MUSICAL TALENT

CONSONANCE

(CITY GROUP)

Grade	V	VI	VII	VIII	Total
Number of Cases	38	36	25	30	129
Mean	56.31	63.05	60.90	61.33	
Standard deviation of the distribution	±9.80	±7.30	±7.95	±7.80	
Standard error of the average	±1.58	±1.21	±1.59	±1.42	

(RURAL GROUP) VIII and above

Number of Cases	32	38	15	45	130
Mean	54.37	55.92	60.83	59.94	
Standard deviation of the distribution	±10.25	± 8.55	±11.45	± 7.10	
Standard error of the average	±1.81	± 1.38	± 2.95	± 1.05	

The mean of the seventh grade urban group for the sense of consonance is 60.90 with a standard error of ± 1.59. The mean of the seventh grade rural group for the sense of consonance is 60.83 with a standard error of ± 2.95.

The mean of the eighth grade urban group for the sense of consonance is 61.33 with a standard error of ± 1.42. The mean of the eighth grade rural group for the sense of consonance is 59.94 with a standard error of ± 1.05.

Table V.- (See Page 27) The mean of the fifth grade urban group for tonal memory is 39.86 with a standard error of ± 2.06. The mean of the fifth grade rural group for tonal memory is 29.37 with a standard error of ± 1.28.

The mean of the sixth grade urban group for tonal memory is 46.11 with a standard error of ± 2.95. The mean of the sixth grade rural group for tonal memory is 29.16 with a standard error of ± 1.70.

The mean of the seventh grade urban group for tonal memory is 58.90 with a standard error of ± 3.24. The mean of the seventh grade rural group for tonal memory is 33.26 with a standard error of ± 3.24.

The mean of the eighth grade urban group for tonal memory is 46.33 with a standard error of ± 3.01. The mean of the eighth grade rural group for tonal memory is 38.17 with a standard error of ± 2.02.

Table VI.- (See Page 28) The mean of the fifth grade urban group for the sense of rhythm is 65.39 with a standard error of ± 1.88. The mean of the fifth grade rural group for the sense of rhythm is 54.16 with a standard error of ± 1.53.

The mean of the sixth grade urban group for the sense of rhythm is 71.25 with a standard error of ± 1.70. The mean of the sixth grade rural group for the sense of rhythm is 60.92 with a standard error of ±1.28.

TABLE V

COMPARISON OF AVERAGE SCORES OF TWO GROUPS OF NEGRO SCHOOL CHILDREN ON THE SEASHORE MEASURES OF MUSICAL TALENT

MEMORY

(CITY GROUP)

Grade	V	VI	VII	VIII	Total
Number of Cases	38	36	25	30	129
Mean	39.86	46.11	58.90	46.33	
Standard deviation of the distribution	±12.75	±17.70	±16.20	±16.50	
Standard error of the average	± 2.06	± 2.95	± 3.24	± 3.01	

(RURAL GROUP)

				VIII and above	
Number of Cases	32	33	13	16	94
Mean	29.37	29.16	33.26	38.17	
Standard deviation of the distribution	± 7.25	± 9.80	±11.70	±12.30	
Standard error of the average	± 1.28	± 1.70	± 3.24	± 2.02	

TABLE VI

COMPARISON OF AVERAGE SCORES OF TWO GROUPS OF NEGRO SCHOOL CHILDREN ON THE SEASHORE MEASURES OF MUSICAL TALENT

RHYTHM

(CITY GROUP)

Grade	V	VI	VII	VIII	Total
Number of Cases	38	36	25	30	129
Mean	65.39	71.25	70.50	69.66	
Standard deviation of the distribution	±11.60	±10.25	± 8.00	±11.65	
Standard error of the average	± 1.88	± 1.70	± 1.60	± 2.10	
		(RURAL GROUP)		VIII and above	
Number of Cases	32	33	13	16	94
Mean	54.16	60.92	58.92	63.57	
Standard deviation of the distribution	± 8.80	± 7.60	± 8.30	±10.65	
Standard error of the average	± 1.53	± 1.28	± 2.21	± 1.64	

The mean of the seventh grade urban group for the sense of rhythm is 70.50 with a standard error of ± 1.60. The mean of the seventh grade rural group for the sense of rhythm is 58.92 with a standard error of ± 2.21.

The mean of the eighth grade urban group for the sense of rhythm is 69.66 with a standard error of ± 2.10. The mean of the eighth grade rural group for the sense of rhythm is 63.57 with a standard error of ± 1.64.

The Reliability of the Differences Between the Means in Favor of the City Group over the Rural Group.- The data in Table VII on Page 30 show the difference between the means of the two groups, urban and rural for each trait and for four grades - the fifth, sixth, seventh and eighth grades. The data, likewise, show the standard error of the difference, the critical ratio, and the chances in 100.

The critical ratio is obtained by the use of the formula $\frac{D}{\sigma \text{ diff}}$. A $\frac{D}{\sigma \text{ diff.}}$ of 3 means practically complete reliability, since ± 3σ includes practically all of the cases in the "distribution of differences" below or above the mean.[1] A $\frac{D}{\sigma \text{diff.}}$ greater than 3 is to be taken as indicating just so much added reliability.

The differences between the means of the fifth grade groups for sensitivity to pitch is 8.60 in favor of the city group. (Table VII, Page 30). The critical ratio is 3.18. The differences, therefore, is completely reliable and the chances are 100 in 100 that the fifth grade city group will always be superior to the fifth grade rural group in sensitivity to pitch.

The difference between the means of the sixth grade groups in sensitivity to pitch is 3.90 in favor of the city group. The critical ratio is 1.31 which means that the difference is not completely reliable but that

[1] Henry E. Garrett, Statistics in Psychology and Education, Longsmans, Green and Co. New York, 1926. p. 133.

TABLE VII

THE RELIABILITY OF THE DIFFERENCE BETWEEN THE MEANS OF THE CITY GROUP OVER THE RURAL GROUP

Grade	Difference	Standard Error of Differences	Critical Ratio	Chances in 100
Pitch				
5th	8.60	2.70	3.18	100
6th	3.90	2.96	1.31	90
7th	3.52	3.06	1.15	87
8th	-0.51	2.86	0.17	56
Intensity				
5th	10.52	2.58	4.07	100
6th	12.48	2.51	4.97	100
7th	5.14	3.96	1.29	90
8th	- 0.34	2.73	0.12	54
Time				
5th	3.86	2.00	1.93	97
6th	6.82	2.05	3.32	100
7th	11.22	3.72	3.01	100
8th	- 0.67	1.99	0.33	63
Consonance				
5th	1.94	2.40	0.80	79
6th	7.13	1.83	3.34	100
7th	0.07	3.35	0.02	50
8th	1.39	1.76	0.73	76
Memory				
5th	10.49	2.42	4.33	100
6th	16.95	3.40	4.98	100
7th	25.64	4.58	5.59	100
8th	8.16	3.62	2.25	99
Rhythm				
5th	11.23	2.42	4.64	100
6th	10.33	2.12	4.87	100
7th	11.58	2.72	4.25	100
8th	6.09	2.66	2.28	99
Combined Score				
5th	7.77	2.42	3.15	100
6th	9.60	2.47	3.79	100
7th	9.53	3.56	2.55	99
8th	2.35	2.60	.98	84

there are 90 chances in 100 that the mean of the city group will be above the mean of the rural group.

The difference between the means of the seventh grade groups is 3.52 in favor of the city group. The critical ratio is 1.15 which means that there are 87 chances in 100 that the true difference is greater than zero or that 87 times in 100, a true difference will occur.

The difference between the means of the eighth grade groups in sensitivity to pitch is - 0.51. The difference is in favor of the rural group. The critical ratio is 0.17. There are 56 chances in 100 that the true difference is greater than zero, meaning that, 56 times in 100 a true difference will occur in favor of the rural group.

The difference between the means of the fifth grade groups for the test of intensity is 10.52 in favor of the city group. (See Table VII on Page 30.) The critical ratio is 4.07 greater than 3 which makes this difference completely reliable. There are 100 chances in 100 that the means of the fifth grade urban group will always exceed the means of the fifth grade rural group.

The difference between the means of the sixth grade groups is 12.48 in favor of the urban group. The critical ratio is 4.97. Inasmuch as the ratio is greater than 3, the difference is completely reliable. The chances are 100 in 100 that the means of the city group will always exceed the means of the rural group in the test of intensity.

The difference between the means of the seventh grade groups (See Table VII, Page 30) is 5.14 in favor of the city group. The critical ratio is 1.29. This means that there are 90 chances in 100 that the mean of the city group will be above the mean of the rural group in the test for sensitivity to intensity.

The difference between the means of the eighth grade groups in sensitivity to intensity is - 0.34 (See Table VII, Page 30) in favor of the rural group. The critical ratio is 0.12. There are, therefore, 54 chances in 100 that a true difference exists in favor of the rural group.

The difference between the means of the fifth grade groups in sensitivity to time is 3.86 (See Table VII, Page 30) in favor of the city group. The critical ratio is 1.93. There are 97 chances in 100 that the difference is greater than zero in favor of the city group.

The difference between the means of the sixth grade groups in sensitivity to time is 6.82 (See Table VII, Page 30) in favor of the city group. The critical ratio is 3.32 greater than 3. The difference then, is completely reliable in favor of the city group.

The difference between the means of the seventh grade groups in sensitivity to time is 11.22 (See Table VII, Page 30) in favor of the city group. The critical ratio is 3.01, greater than 3, which makes the difference completely reliable in favor of the city group.

The difference between the means of the eighth grade groups in sensitivity to time is - 0.67 (See Table VII, Page 30) in favor of the rural group. The critical ratio is 0.33. There are, therefore, 63 chances in 100 that a true difference exists in favor of the rural group.

The difference between the means of the fifth grade groups in the sense of consonance test is 1.94 (See Table VII, Page 30) in favor of the city group. The critical ratio is 0.80. There are 79 chances in 100 that the difference is greater than zero.

The difference between the means of the sixth grade groups in the sense of consonance test is 7.13 in favor of the city group. The critical ratio is 3.34. The ratio is greater than 3 meaning that the difference is

completely reliable.

The difference between the means of the seventh grade groups for the sense of consonance test is 0.07 in favor of the city group. The critical ratio is 0.02. The chances are 50 in 100 that the difference is greater than zero.

The difference between the means of the eighth grade groups for the sense of consonance test is 1.39 (See Table VII on Page 30) in favor of the city group. The critical ratio is 0.73 which means that there are 76 chances in 100 that the mean of the city group will exceed the mean of the rural group.

The difference between the means of the fifth grade groups in the test for tonal memory is 10.49 (See Table VII, Page 30) in favor of the city group. The critical ratio is 4.33 greater than 3. The difference is completely reliable.

The difference between the means of the sixth grade groups in the test for tonal memory is 16.95 (See Table VII, Page 30) in favor of the city group. The critical ratio is 4.98, greater than 3. The difference, therefore, is completely reliable.

The difference between the means of the seventh grade groups in the test for tonal memory is 25.64 (See Table VII, Page 30) in favor of the city group. The critical ratio is 5.59 which is greater than 3. The difference is completely reliable.

The difference between the means of the eighth grade groups in the test for tonal memory is 8.16 (See Table VII, Page 30) in favor of the urban group. The critical ratio is 2.25, less than 3. The difference, therefore, is not completely reliable but there are 99 chances in 100 that a true difference exists.

The difference between the means of the fifth grade groups in sensitivity to rhythm is 11.23, (See Table VII, Page 30) in favor of the urban group. The critical ratio is 4.64. This difference is completely reliable in favor of the urban group.

The difference between the means of the sixth grade groups in sensitivity to rhythm is 10.33 (See Table VII, Page 30) in favor of the city group. The critical ratio is 4.87. The difference, therefore, is completely reliable.

The difference between the means of the seventh grade groups in sensitivity to rhythm (See Table VII, Page 30) is 11.58. The critical ratio is 4.25 greater than 3 which means that the difference is completely reliable.

The difference between the means of the eighth grade groups in sensitivity to rhythm is 6.09 (See Table VII, Page 30) in favor of the urban group. The critical ratio is 2.28 less than 3. The difference, therefore, is not completely reliable but there are 99 chances in 100 that the urban group will surpass the rural group.

Combined Scores. - The test scores for the six traits, pitch, intensity, time, consonance, tonal memory, and rhythm, were combined to form a total score. The following results are found:

The difference between the means of the fifth grade groups for the combined traits is 7.77 (See Table VII, Page 30) in favor of the urban group. The critical ratio is 3.15 greater than 3. The difference, therefore, is completely reliable.

The difference between the means of the sixth grade groups for the combined traits is 9.60 (See Table VII, Page 30) in favor of the city group. The critical ratio is 3.79, completely reliable.

The difference between the means of the seventh grade groups for the combined traits is 9.53. The critical ratio is 2.55. This difference is not reliable but there are 99 chances in 100 that the mean of the urban group will exceed the mean of the rural group.

The difference between the means of the eighth grade groups for the combined traits is 2.35. The critical ratio is .98. There are 84 chances in 100 that the mean of the urban group will exceed the mean of the rural group.

The Per Cent of the Rural Group which Exceeds the Mean of the Urban Group.- Table VIII on Page 36 shows the per cent of the rural group which exceeds the mean of the urban group for the single tests of the battery and the combined score. The number of cases, city and rural, is shown for grades five, six, seven and eight.

The Correlations between Imputed General Intelligence and the Single Tests of the Battery and the Combined Score of Musical Talent for Both Groups.- Table IX on Page 37 shows the correlations between imputed general intelligence and the single tests of the battery and the combined score of musical talent for both the urban and the rural groups with the number of cases for each group and the probable error of the correlation.

A correlation of .40 $\pm$ .05 is found between general intelligence and pitch for the city group.

A correlation of - .03 $\pm$ .06 is found between general intelligence and pitch for the rural group.

A correlation of .14 $\pm$ .05 is found between the general intelligence and intensity for the city group.

A correlation of .05 $\pm$ .06 is found between general intelligence and intensity for the rural group.

A correlation of .12 $\pm$ .05 is found between general intelligence and time for the city group.

TABLE VIII

THE PER CENT OF THE RURAL GROUP WHICH EXCEEDS THE MEAN OF THE URBAN GROUP

Grade	% Exceeding	Number of Cases	
		City	Rural
Pitch			
5th	17.72	38	31
6th	35.57	36	37
7th	35.20	25	14
8th	51.20	30	43
Intensity			
5th	16.87	38	32
6th	9.01	36	38
7th	33.72	25	15
8th	50.80	30	45
Time			
5th	29.46	39	19
6th	20.61	36	32
7th	16.85	24	14
8th	75.49	30	37
Consonance			
5th	42.86	38	32
6th	20.33	36	38
7th	50.00	25	15
8th	42.47	30	45
Memory			
5th	7.49	38	32
6th	4.27	36	33
7th	1.79	25	13
8th	25.46	30	16
Rhythm			
5th	10.20	38	33
6th	8.85	36	35
7th	8.23	25	14
8th	28.43	30	17
Combined Score			
5th	20.76	38	30
6th	16.44	36	36
7th	24.29	25	15
8th	45.64	30	34

TABLE IX

SHOWING THE CORRELATIONS BETWEEN IMPUTED GENERAL INTELLIGENCE AND THE SINGLE TESTS OF THE BATTERY AND THE COMBINED SCORE OF MUSICAL TALENT FOR BOTH GROUPS

	City			Rural		
	No. Cases	r	P.E.	No.Cases	r	P.E.
Pitch	123	.400	.051	101	-.034	.067
Intensity	123	.140	.059	106	.054	.065
Time	123	.127	.059	76	.001	.078
Consonance	123	-.025	.060	105	-.054	.065
Memory	124	.320	.054	91	-.066	.070
Rhythm	123	.120	.060	103	-.036	.066
Combined	119	.298	.055	116	-.030	.062

A correlation of .001 ± .07 is found between general intelligence and time for the rural group.

A correlation of-.02 ± .06 is found between general intelligence and consonance for the urban group.

A correlation of - .05 ± .06 is found between general intelligence and consonance for the rural group.

A correlation of .32 ± .05 is found between general intelligence and tonal memory for the urban group.

A correlation of - .06 ± .07 is found between general intelligence and tonal memory for the rural group.

A correlation of - .12 ± .06 is found between general intelligence and rhythm for the urban group.

A correlation of -.03 ± .06 is found between general intelligence and rhythm for the rural group.

A correlation of .29 ± .05 is found between general intelligence and the combined traits for the urban group.

A correlation of .03 ± .06 is found between general intelligence and the combined traits for the rural group.

Figures 1, 2, and 3 under Diagrams I, II, and III(Pages 39, 40, and 41) respectively, show the individual profiles of musical talent and general intelligence of nine pupils, selected from this study. Two pupils come from the fifth grade, three from the seventh, and four from the eighth.

Interpretation of Data: Comparison of Average Scores of Two Groups of Negro School Children on the Seashore Measures of Musical Talent:- A comparison of the average scores of the urban and the rural groups of Negro school children on the Seashore Measures of the Sense of Pitch shows a tendency for the younger subjects of the city groups to rate higher in pitch capacity than the older subjects, according to the means shown in Table I (Page 21).

DIAGRAM I

INDIVIDUAL PROFILES OF MUSICAL TALENT AND GENERAL INTELLIGENCE OF CERTAIN PUPILS SELECTED FROM THIS STUDY

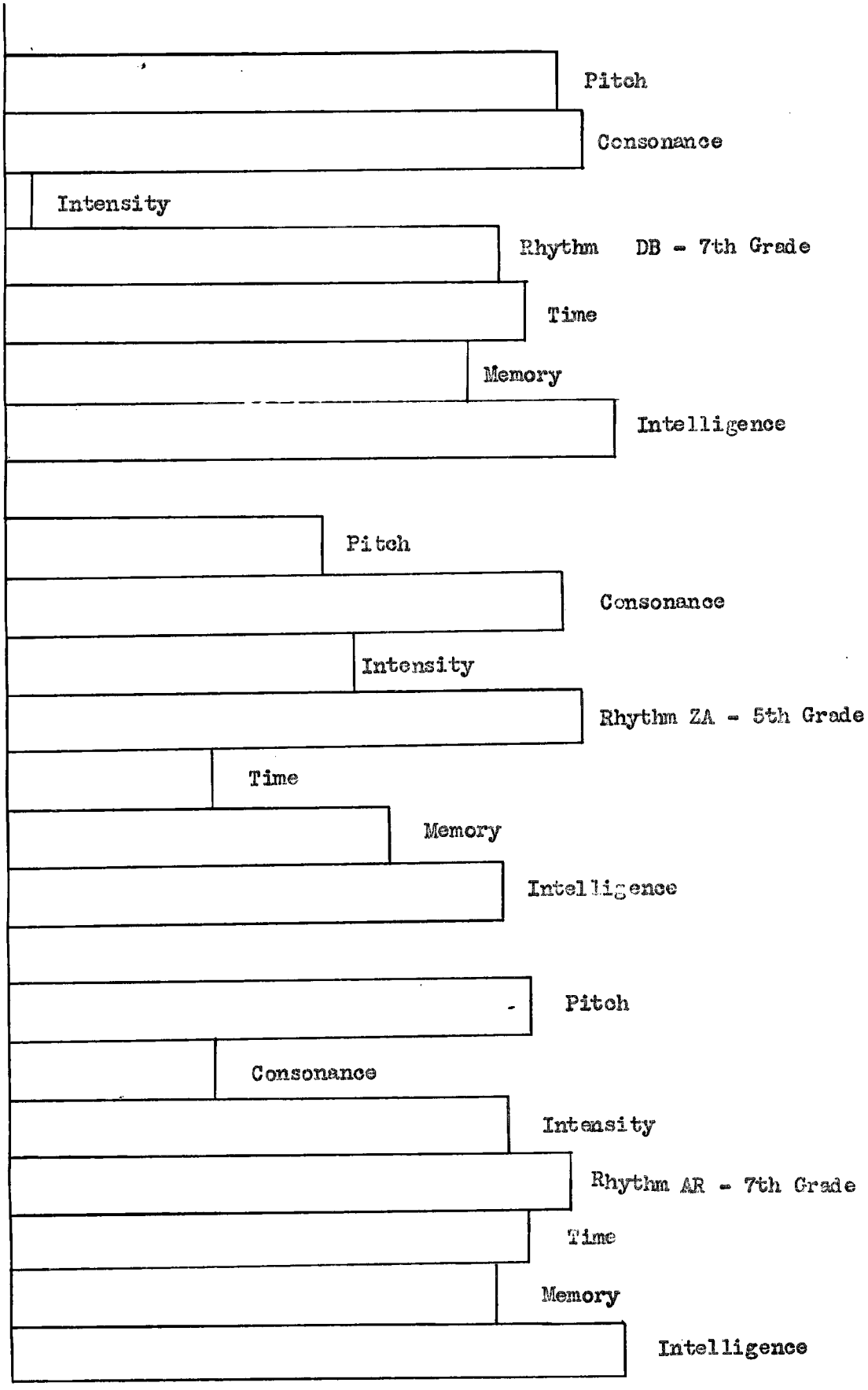

Fig. 1 DB - 7th Grade

Fig. 2 Rhythm ZA - 5th Grade

Fig. 3 Rhythm AR - 7th Grade

DIAGRAM II

INDIVIDUAL PROFILES OF MUSICAL TALENT
AND GENERAL INTELLIGENCE OF CERTAIN PUPILS
SELECTED FROM THIS STUDY

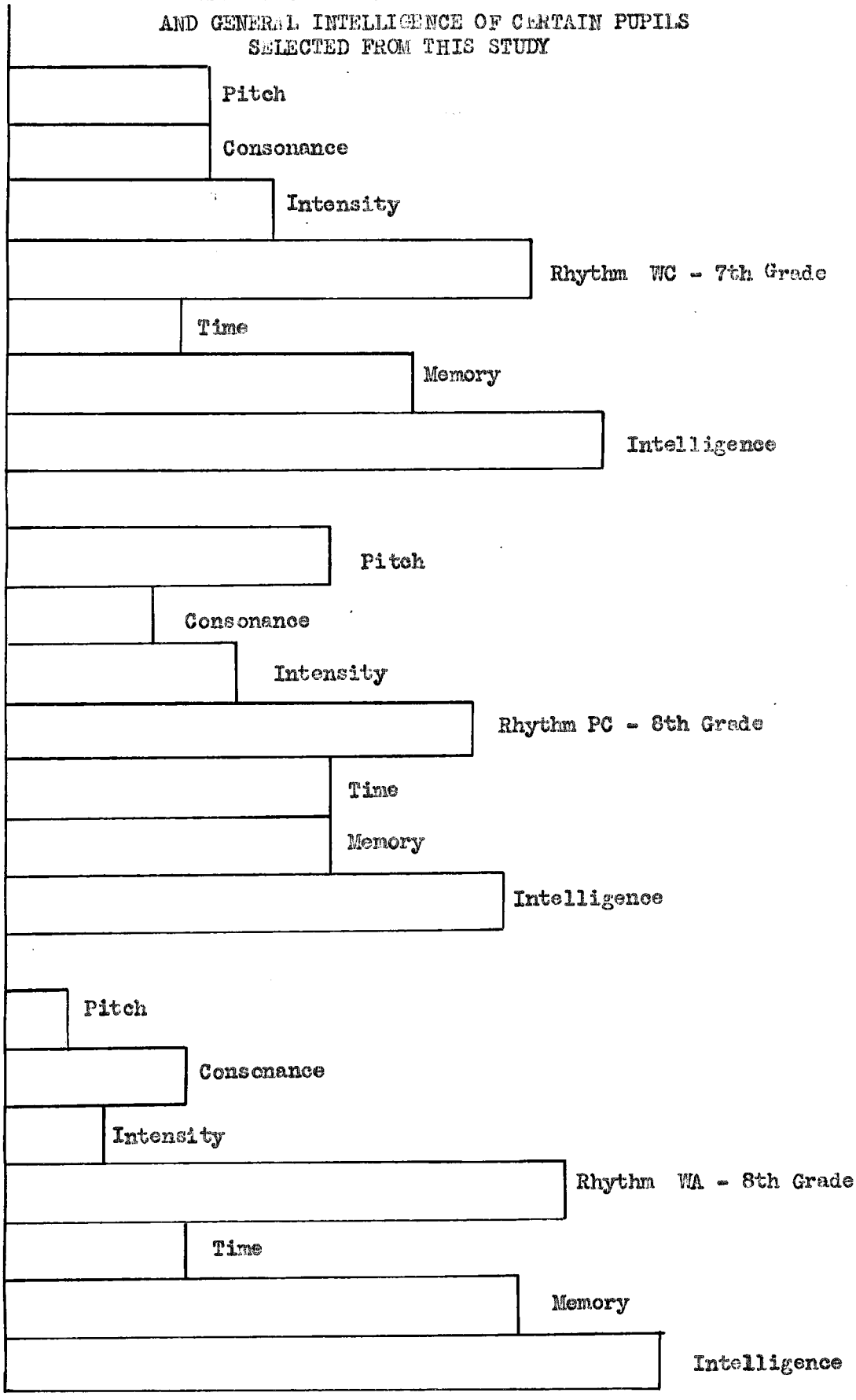

Fig. 1 Rhythm WC - 7th Grade

Fig. 2 Rhythm PC - 8th Grade

Fig. 3 Rhythm WA - 8th Grade

DIAGRAM III

INDIVIDUAL PROFILES OF MUSICAL TALENT AND GENERAL INTELLIGENCE OF CERTAIN PUPILS SELECTED FROM THIS STUDY

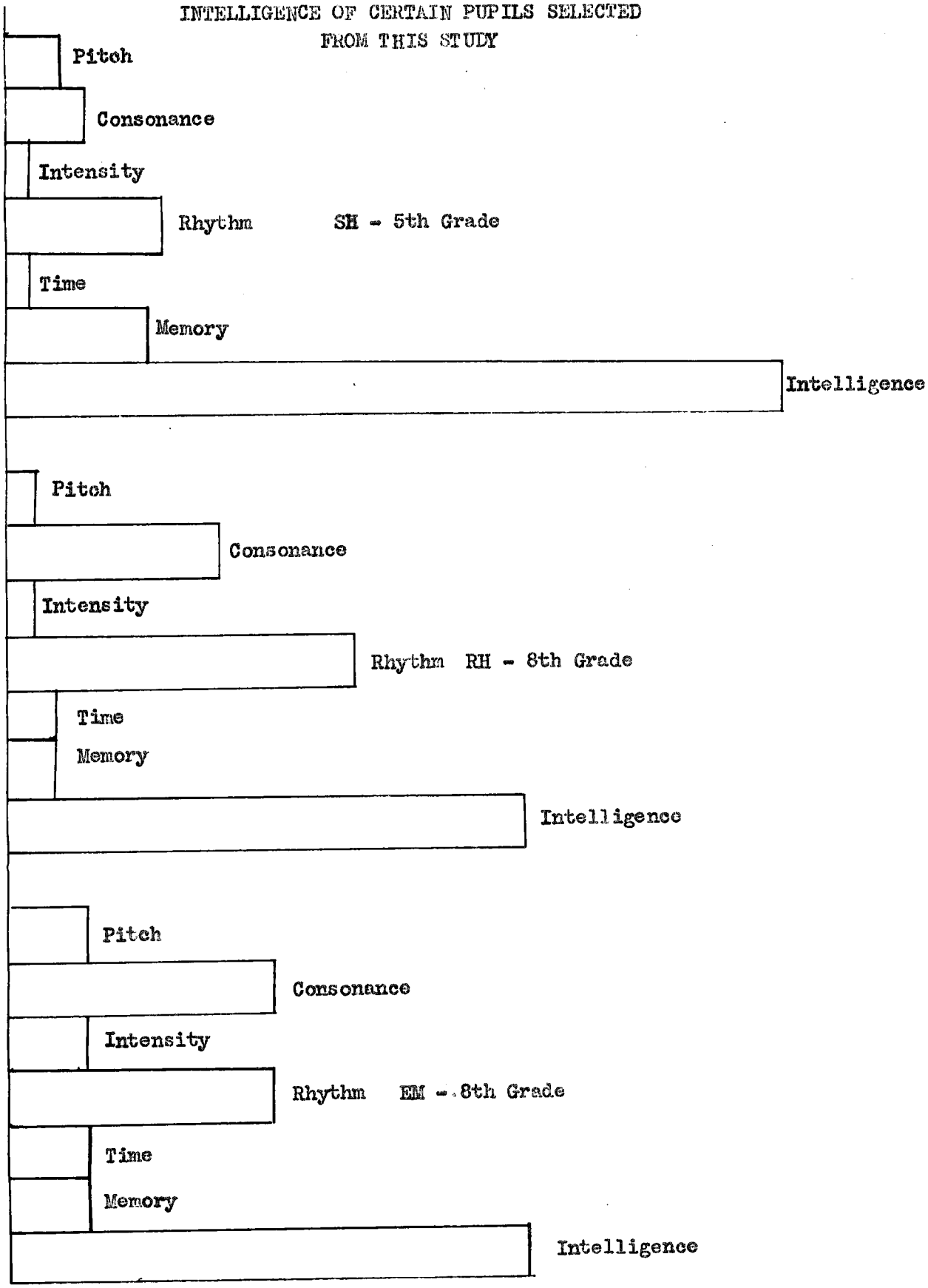

Fig. 1 SH - 5th Grade

Fig. 2 RH - 8th Grade

Fig. 3 EM - 8th Grade

The rural groups show a tendency to improve with age in pitch capacity. The rural children, with the exception of the eighth grade, appear more homogeneous in this trait than the city children. The standard deviation points to the amount of homogeneity in the groups. The S. D. is shown for both groups in Table I (Page 21).

There is greater ability shown on the part of the younger subjects of the city group for the sense of intensity as can be seen by a comparison of themeans shown in Table II (Page 22). There is gradual improvement on the part of the older groups of the rural children for the sense of intensity. The rural group appears more homogeneous than the city group in this trait.

The pattern of improvement is in favor of the older children for both the city and rural groups in the sense of time.(Table III, Page 24). There is very little difference in the dispersion of the two groups in this trait.

A comparison of the means of both groups in Table IV (Page 25), shows a tendency to improve with age in the sense of consonance. The sixth grade children stand highest of the city groups, however, while the seventh grade children rank highest for the rural group. The city group appears more homogeneous in the sense of consonance than the rural group.

There seems to be a tendency for both groups to improve with age in memory capacity according to the means shown in Table V (Page 27). There is gradual improvement on the part of the rural children. The seventh grade city children rank higher than the eighth grade city children. The rural children appear more homogeneous than the city children.

Excepting the fifth grade urban children, the younger children surpass the older ones in the sense of rhythm. (See Table VI on Page 28). There is gradual improvement with age on the part of the rural children in the sense of rhythm. The rural groups appear more homogeneous than the city groups.

The Reliability of the Difference in Favor of the City Group.-

The difference is in favor of the city group for grades five, six, and seven in pitch capacity (Table VII, Page 30). The difference is in favor of the eighth grade rural group in the sense of pitch. There is a reliable difference for the fifth grade and decreasing reliability for each succeeding grade (Table VII, Page 30).

The difference is in favor of the city group for grades five, six, and seventh in intensity. The eighth grade rural group exceeds the eighth grade city group in this trait. There is complete reliability for the fifth and the sixth grade urban groups with decreasing reliability for the seventh and eighth grades.

The difference is in favor of the city group for grades five, six, and seven in sensitivity to time. The difference is in favor of the eighth grade rural group in this trait. There is complete reliability for the sixth and seventh grade urban groups, the fifth grade showing almost complete reliability with 97 chances in 100. (See Table VII, Page 30).

The difference is in favor of the city group for grades five, six, seven and eight for the sense of consonance. The sixth grade shows complete reliability.

The difference is in favor of the city group for grades, five, six, seven and eight in sensitivity to rhythm. There is complete reliability for the fifth, sixth and seventh grades with 99 chances in 100 of the eighth grade exceeding in the sense of rhythm. (See Table VII, Page 30.)

The difference is in favor of the city group for grades five, six, seven and eight in memory capacity. There is complete reliability for grades five, six and seven. The eighth grade urban group will exceed the eighth grade rural group 99 chances in 100.

The traits, pitch, intensity, time, consonance, memory and rhythm were combined to form a total score. The difference is in favor of the city group for all four grades, five, six, seven and eight. The difference is completely reliable for the fifth and sixth grades; the seventh grade, 99 chances in 100; the eighth grade 84 chances in 100. Greater ability is shown for the younger children in the combined score and for each separate trait when the groups are compared.

The Per Cent of the Rural Group which Exceeds the Mean of the Urban Group.- The per cent of the rural group which exceeds the mean of the urban group increases from 17.72 for the fifth grade children to 51.20 for the eighth grade children in pitch capacity. (See Table VIII, Page 36).

The per cent of the rural group which exceeds the mean of the urban group increases in favor of the older children in the sense of intensity.

The per cent of the rural group which exceeds the mean of the urban group decreases 29.46, 20.61, 16.85 for the fifth, sixth and seventh grades. The eighth grade exceeds the mean of the urban group to the extent of 75.49 per cent for the sense of time. (See Table VIII, Page 36).

The rural group most closely approaches the city group in the sense of consonance. The per cent of the rural group which exceeds the mean of the urban group reads 42.86, 20.33, 50.00,42.47 for grades five, six, seven, and eight.

A very small per cent of the rural group in all four grades exceeds the mean of the urban group for the sense of rhythm. The per cent reads 10.20, 8.85, 8.23 and 28.43.

An exceedingly small per cent of the rural group is beyond the mean of the urban group in tonal memory. The rural group is surpassed by the city group in this trait more than in any of the six traits tested. The per cent exceeding the mean of the urban group reads 7.49, 4.27, 1.79, and 25.46.

The per cent of the rural group which exceeds the mean of the urban group is in favor of the older children in grades seven and eight for the combined score. The per cent exceeding reads 20.76, 16.44, 24.29 and 45.64 for grades five, six, seven and eight. (See Table VIII, Page 36).

Showing the Correlations Between Imputed General Intelligence and the Single Tests of the Battery and the Combined Score of Musical Talent for Both Groups.- The following correlations with General Intelligence are found for the city group: Pitch, .40 ± .05; intensity, .14 ± .05; time, .12 ± .05; consonance - .02 ± .06; tonal memory, .32 ± .05 and rhythm, .12 ± .06. (See Table IX, Page 37).

The following correlations with General Intelligence are found for the rural group: Pitch, - .03 ± .06; intensity, .05 ± .06; time, .001 ± .07; consonance, - .05 ± .06; tonal memory, - .06 ± .07, and rhythm - .03 ± .06. (See Table IX, Page 37).

There seems to be fairly general agreement among workers with tests[1] that an

r from .00 to ± .20 denotes indifferent or negligible relationship.

r from ± .20 to ± .40 denotes low correlation: present but slight.

r from ± .40 to ± .70 denotes substantial or marked relationship.

r from ± .70 to ± 1.00 denotes high relation.

Pitch seems to have an appreciable correlation with imputed intelligence for the city group, r = .40 ± .05 which denotes substantial relationship according to Garrett. Tonal memory is next in rank. r = .32 ± .05 which denotes correlation present but slight; intensity, r = .14 ± .05; time r = .12 ± .05; rhythm r = .12 ± .06 and consonance, r = -.02 ± .06, all denoting negligible relation.

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[1]Henry E. Garrett, Statistics in Psychology and Education, Longmans Green & Company. New York. 1926, p. 298.

Smith,[1] a Seashore student, has found an appreciable correlation between pitch discrimination and estimated intelligence.

Weaver[2] found pitch to have the highest correlation of the battery with the Army Alpha Test - pitch, .35 ± .06. Tonal memory ranked second, .26 ± .06, followed by intensity, .24 ± .06. This same rank takes place for the urban group in the present study.

The correlations found for the rural group all denote negligible relationship. They read pitch - .03 ± .06; intensity, .05 ± .06; time, .00 ± .07; consonance, - .05 ± .06; rhythm - .03 ± .06 and memory, -.06 ± .07.

The r for the combined tests is .29 ± .05 indicating slight correlation with intelligence for the urban group and .03 ± .06 indicating indifferent relationship with intelligence for the rural group.

Individual Profiles of Musical Talent and General Intelligence of Certain Pupils. - The individual profiles are self-explanatory. Pupil SH - 5th grade is especially significant. This subject has a very high I. Q. but her standing in the various musical traits is uniformly low.

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[1] F. O. Smith, "The Effect of Training in Pitch Discrimination." Psychology Monograph, 1914, 16 No. 69, pp. 67-103.

[2] A. T. Weaver, "Experimental Studies in Vocal Expression." Journal of Applied Psychology, 1924, 8, 23-51, 159-186.

CHAPTER III

SUMMARY AND CONCLUSIONS

The two groups, composed of Negro school children, urban and rural, show differences in tonal memory and rhythm which are significantly in favor of the urban children in the four grades tested. The differences in intensity, time and the combined score are significant for the fifth, sixth and seventh grades in favor of the urban children. There is also a significant difference in pitch for the fifth and sixth grades in favor of the urban group and a significant difference in consonance for the sixth grade in favor of the urban group. (See Table VII on Page 30.)

The children of the eighth grade rural group exceed the children of the eighth grade urban group in pitch, intensity and time; the differences, however, are not significant. (See Table VII on Page 30.)

Complete reliability in favor of the city group over the rural group is found for the fifth grade in pitch; for the fifth and sixth grades in intensity;for the sixth and seventh grades in time; for the sixth grade in consonance; for the fifth, sixth and seventh grades in rhythm and tonal memory; and for the fifth and sixth grades in the combined score. (See Table VII on Page 30.)

The correlations, as a whole, between imputed general intelligence and the single tests of the battery and the combined score of musical talent for both groups are low. (See Table IX on Page 30.) Positive and negative correlations were found. Seashore reports that none of his tests correlate with intelligence to any great extent. (Note Seashore on Page 10.) The correlations for the urban group are: Pitch, .40 $\pm$ .05; intensity, .14 $\pm$ .05; time, .12 $\pm$ .05; consonance, - .02 $\pm$ .06; rhythm, .12 $\pm$ .06, and the combined score, .29 $\pm$ .05. (See Table IX on Page 30.) Consonance gave the lowest correlation, - .02 $\pm$ .06, for the

city group.

The correlations for the rural group are: pitch, - .03 ± .06; intensity, .05 ± .06; time, .001 ± .07; consonance, - .05 ± .06; memory, - .06 ± .07; and rhythm,-.03 ± .06. The combined score gave a correlation with intelligence of .03 ± .06. (See Table IX on Page 37.)

For purposes of determining the stability of an individual in musical capacity, profiles were prepared in which the individuals' performances are shown graphically for each trait and for imputed general intelligence.

Diagram I on Page 39 shows the profiles of three subjects possessing unusual talent for music. "D" ranks high in pitch, very high in consonance, drops very low in intensity, but is high in time, rhythm and tonal memory. "A" and "R" together with "D" belong to the group that Seashore advises to stimulate freely.

Diagram II on Page 40 shows the profiles of three subjects of average ability who should be encouraged.

Diagram III shows the profiles of three subjects who rank very low in musical endowment who should be discouraged. (See Page 41).

Conclusions:-

(1) The Seashore Measures of Musical Talent present an estimate of the native ability of two groups of Negro school children in musical talent. The basic capacities considered are pitch, intensity, time, consonance, tonal memory and rhythm.

(2) The results show that the urban group is superior to the rural group in musical talent but the per cent of the rural group which exceeds the mean of the urban group indicates that in every grade there are rural children who are equal to the city children in every trait of musical talent.

(3) The correlations are: .40 ± .05 in pitch for the urban children and - .03 ± .06 in pitch for the rural children; .14 ± .05 in intensity for the urban children and .05 ± .06 in intensity for the rural children; .12 ± .05 in time for the urban children and .001 ± .07 in time for the rural children; - .02 ± .06 in consonance for the urban children and - .05 ± .06 in consonance for the rural children; .32 ± .05 in tonal memory for the urban children and - .06 ± .07 in tonal memory for the rural children; .12 ± .06 in rhythm for the urban children and-.03 ± .06 in rhythm for the rural children; .29 ± .05 for the combined traits for the urban children and .03 ± .06 for the combined traits for the rural children.

(4) The correlations tend to show a slight relationship of intelligence and musical ability for the urban children and a negligible relationship of intelligence and musical ability for the rural children. Pitch and memory show the highest correlations with intelligence for the city group. A good correlation of .40 ± .05 is found for pitch. These results are similar to the results obtained by other investigators.

The findings in this investigation are practically in complete harmony with results obtained by other investigators. C. E. Seashore in his Psychology of Musical Talent has reported that not one of his battery of tests correlates to any great extent with estimated intelligence. Weaver finds pitch to have the highest correlation with intelligence and tonal memory the next highest. Highsmith finds the same high rank for pitch as compared with the other traits. (See Page 10.)

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